

IN THE CLAIMS:

1. (Currently Amended) An article protected by a protective coating, comprising:

a substrate having a substrate surface; and

a protective coating comprising an outer layer deposited upon the substrate surface and having a protective-coating outer surface, and a diffusion zone formed by interdiffusion of the outer layer and the substrate, wherein

the outer layer comprises platinum, aluminum, added hafnium, no more than about 2 weight percent hafnium, elements diffused into the protective coating from the substrate, and substantially no added silicon, wherein the hafnium in the outer layer is present in an amount of no more than about 2 weight percent hafnium, and wherein the outer layer is substantially a single phase.

2. (Original) The article of claim 1, wherein the substrate is a nickel-base alloy.

3. (Original) The article of claim 1, wherein the article is a component of a gas turbine engine.

4. (Currently Amended) ~~The article of claim 1,~~ An article protected by a protective coating, comprising

a substrate having a substrate surface; and

a protective coating comprising an outer layer deposited upon the substrate surface and having a protective-coating outer surface, and a diffusion zone formed by interdiffusion of the outer layer and the substrate, wherein

the outer layer comprises platinum, aluminum, no more than about 2 weight percent hafnium, elements diffused into the protective coating from the substrate, and substantially no added silicon, wherein

the outer layer is substantially a single phase, and wherein
the protective coating has an average hafnium composition profile
comprising

a relatively small first concentration of hafnium in a first depth
range adjacent to the protective-coating outer surface,

a relatively large second concentration of hafnium, but not
exceeding about 9 weight percent, in a second depth range at greater depths than the
first depth range below the protective-coating outer surface, and

a relatively small third concentration of hafnium in a third depth
range at yet greater depths than the second depth range below the protective-coating
outer surface.

5. (Currently amended) ~~The article of claim 1~~ An article protected by a
protective coating, comprising:

a substrate having a substrate surface; and

a protective coating comprising an outer layer deposited upon the substrate
surface and having a protective-coating outer surface, and a diffusion zone formed by
interdiffusion of the outer layer and the substrate, wherein

the outer layer comprises platinum, aluminum, no more than about 2
weight percent hafnium, elements diffused into the protective coating from the
substrate, and substantially no added silicon, wherein

the outer layer is substantially a single phase, and wherein
the protective coating has an average hafnium composition profile
comprising

from about 0.1 to about 0.5 weight percent hafnium averaged over
locations from the protective-coating outer surface to a depth of about 5 micrometers
below the protective-coating outer surface, and

from about 1 to about 9 weight percent hafnium averaged over
locations from about 10 micrometers below the protective-coating outer surface to about

50 micrometers below the protective-coating outer surface.

6. (Original) The article of claim 1, wherein the protective coating has an average platinum composition comprising from about 20 to about 30 weight percent platinum averaged over locations from about 10 micrometers below the protective coating outer surface to about 20 micrometers below the protective coating outer surface.

7. (Original) The article of claim 1, wherein the protective coating has an average aluminum composition comprising from about 15 to about 25 weight percent aluminum averaged over locations from about 10 micrometers below the protective coating outer surface to about 20 micrometers below the protective coating outer surface.

8. (Original) The article of claim 1, further including
a ceramic thermal barrier coating overlying and contacting the protective-coating outer surface.

9. (Previously Amended) An article protected by a protective coating, comprising:

a substrate having a substrate surface; and

a protective coating comprising an outer layer deposited upon the substrate surface and having a protective-coating outer surface, and a diffusion zone formed by interdiffusion of the outer layer and the substrate, wherein

the outer layer comprises platinum, aluminum, hafnium, elements diffused into the protective coating from the substrate, and substantially no added silicon, and wherein the protective coating has an average hafnium composition profile comprising

from about 0.1 to about 0.5 weight percent hafnium averaged over

locations from the protective-coating outer surface to a depth of about 5 micrometers below the protective-coating outer surface, and

from about 1 to about 9 weight percent hafnium averaged over locations from about 10 micrometers below the protective-coating outer surface to about 50 micrometers below the protective-coating outer surface, and wherein the outer layer is substantially a single phase.

10. (Original) The article of claim 9, wherein the substrate is a nickel-base alloy.

11. (Original) The article of claim 9, wherein the article is a component of a gas turbine engine.

12. (Original) The article of claim 9, wherein the protective coating has an average hafnium composition profile comprising

from about 0.1 to about 0.5 weight percent hafnium averaged over locations from the protective-coating outer surface to a depth of about 5 micrometers below the protective-coating outer surface, and

from about 1 to about 6 weight percent hafnium averaged over locations from about 10 micrometers below the protective-coating outer surface to about 50 micrometers below the protective-coating outer surface.

13. (Original) The article of claim 9, wherein the protective coating has an average platinum composition comprising from about 20 to about 30 weight percent platinum averaged over locations from about 10 micrometers below the protective coating outer surface to about 20 micrometers below the protective coating outer surface.

14. (Original) The article of claim 9, wherein the protective coating has an average aluminum composition comprising from about 15 to about 25 weight percent

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aluminum averaged over locations from about 10 micrometers below the protective outer coating outer surface to about 20 micrometers below the protective coating outer surface.

15. (Original) The article of claim 9, further including
a ceramic thermal barrier coating overlying and contacting the protective-coating outer surface.